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Service Manual

450F BACKHOE LOADER

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Product: BACKHOE LOADER
Model: 450F BACKHOE LOADER HJR
Configuration: 450F Backhoe Loader HJR00001-UP (MACHINE) POWERED BY C4.4 Engine

Disassembly and Assembly
C4.4 Engines for Caterpillar Built Machines
Media Number -KENR6082-21 **Publication Date -01/10/2013** **Date Updated -30/01/2019**

i03001183

Accessory Drive - Assemble

SMCS - 1207-016

Assembly Procedure

Table 1

Required Tools			
Tool	**Part Number**	**Part Description**	**Qty**
B	7M-7456	Bearing Mount Compound	1

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

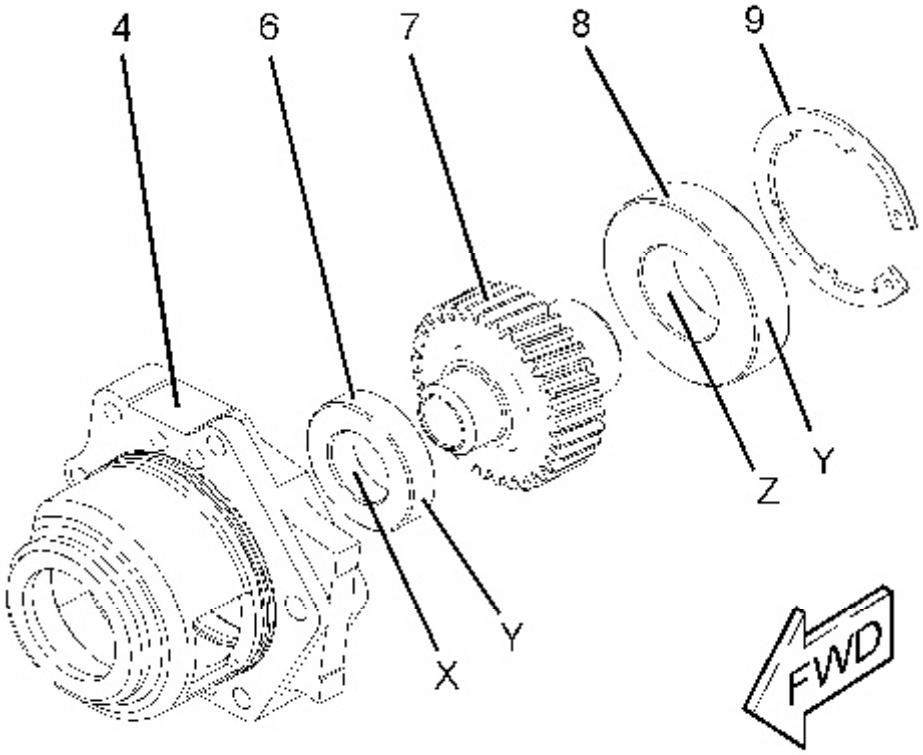

Illustration 1 g01440577

Typical example

1. Inspect the condition of the teeth and the splines of gear (7) for wear or damage. Inspect bearing (6) and bearing (8). Inspect circlip (9), and front housing (4) for wear or damage. Replace any components that are worn or damaged.

2. Apply a small continuous bead of Tooling (B) to inner Surface (X) of bearing (6). Place the gear shaft on a suitable support. Press on the inner race of bearing (6) until bearing (6) is against the shoulder of gear (7). Remove any excess sealant.

3. Apply a small continuous bead of Tooling (B) to inner Surface (Z) of bearing (8). Place the inner race of bearing (8) onto a suitable support. Press the shaft of gear (7) onto bearing (8) until the shoulder of the gear is against the bearing. Remove any excess sealant.

4. Apply a small continuous bead of Tooling (B) to outer Surface (Y) of bearing (6) and bearing (8). Place accessory drive housing (4) on a suitable support. Press the assembly of the gear into the accessory drive housing. Ensure that bearing (6) is against the front face of the recess in accessory drive housing (4). Remove any excess sealant.

5. Install circlip (9) into the groove in accessory drive housing (4). Ensure that circlip (9) is correctly positioned in the groove.

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Configuration: 450F Backhoe Loader HJR00001-UP (MACHINE) POWERED BY C4.4 Engine

Disassembly and Assembly
C4.4 Engines for Caterpillar Built Machines
Media Number -KENR6082-21 **Publication Date -01/10/2013** **Date Updated -30/01/2019**

i03001182

Accessory Drive - Disassemble

SMCS - 1207-015

Disassembly Procedure

Table 1

Required Tools			
Tool	**Part Number**	**Part Description**	**Qty**
A	8H-0663	Bearing Puller	1
	5F-7345	Puller	1
	126-7183	Crossblock	1
	126-7177	Puller Leg	2

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

NOTICE

Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting and repair of the product. Be prepared to collect the fluid with suitable containers

before opening any compartment or disassembling any component containing fluids.

Dispose of all fluids according to local regulations and mandates.

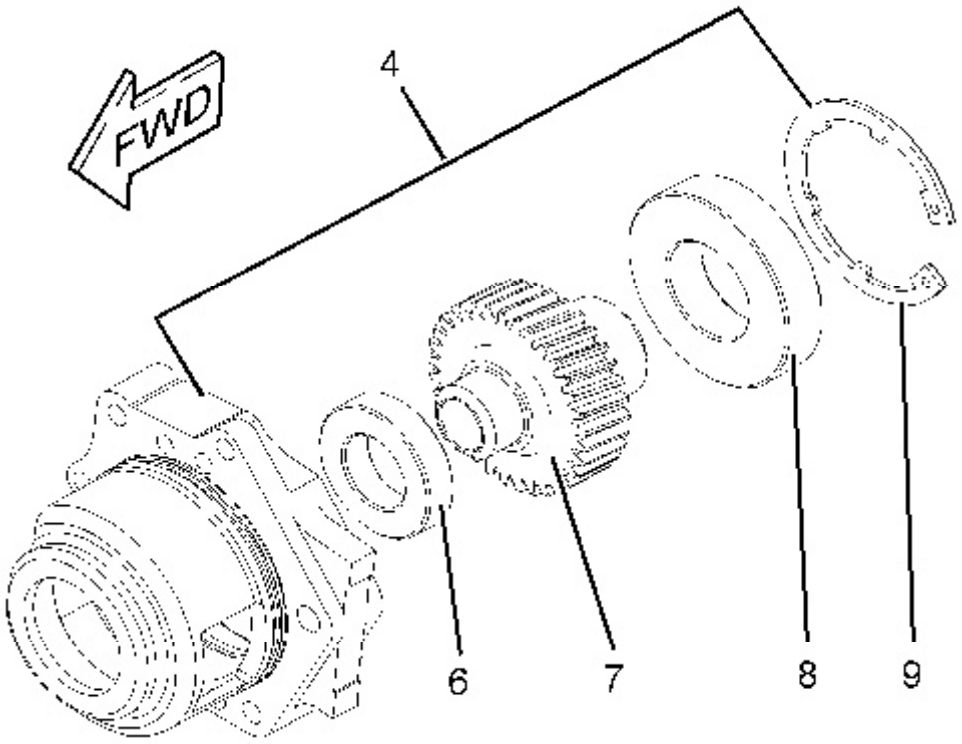

Illustration 1 g01440573

Typical example

1. Remove circlip (9) from accessory drive housing (4).
2. Place accessory drive housing (4) onto a suitable support. Press the assembly of gear (7), bearing (6) and bearing (8) out of accessory drive housing (4).
3. Use a Tooling (A) in order to remove bearing (6) and bearing (8) from gear (7).

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Disassembly and Assembly
C4.4 Engines for Caterpillar Built Machines
Media Number -KENR6082-21 **Publication Date -01/10/2013** **Date Updated -30/01/2019**

i03505451

Accessory Drive - Install

SMCS - 1207-012

Installation Procedure

Table 1

Required Tools			
Tool	**Part Number**	**Part Description**	**Qty**
C	1U-6396	O-Ring Assembly Compound	1
D	4C-4030	Thread Lock Compound	1

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

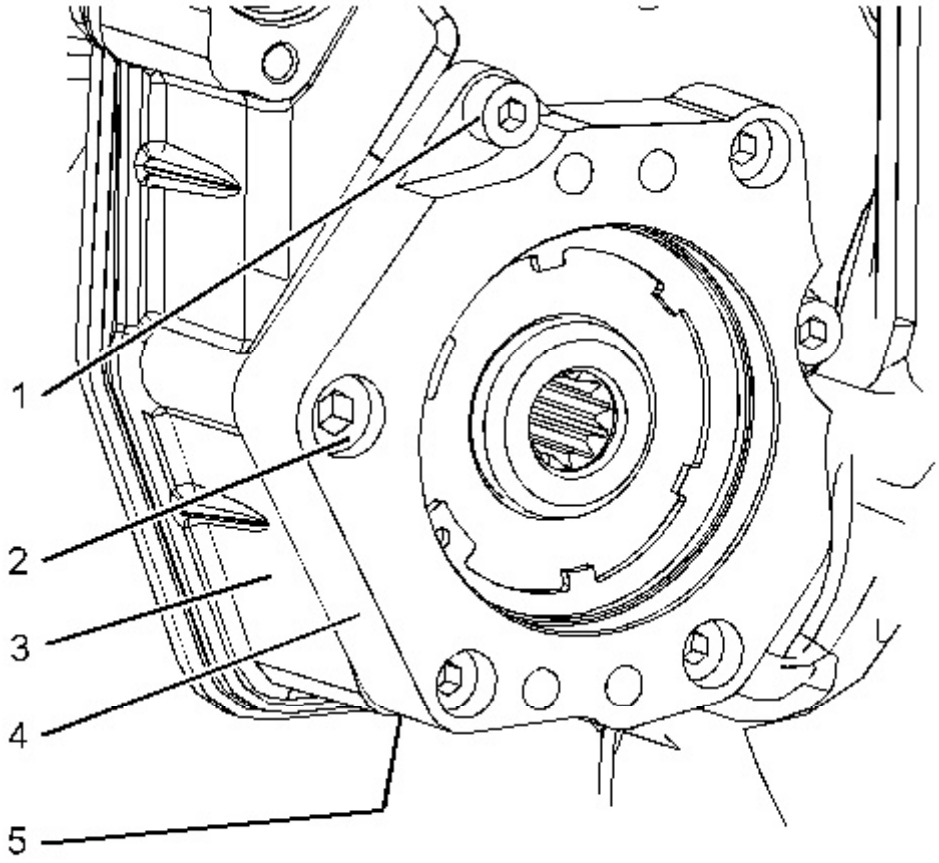

Illustration 1 g01441026

Typical example

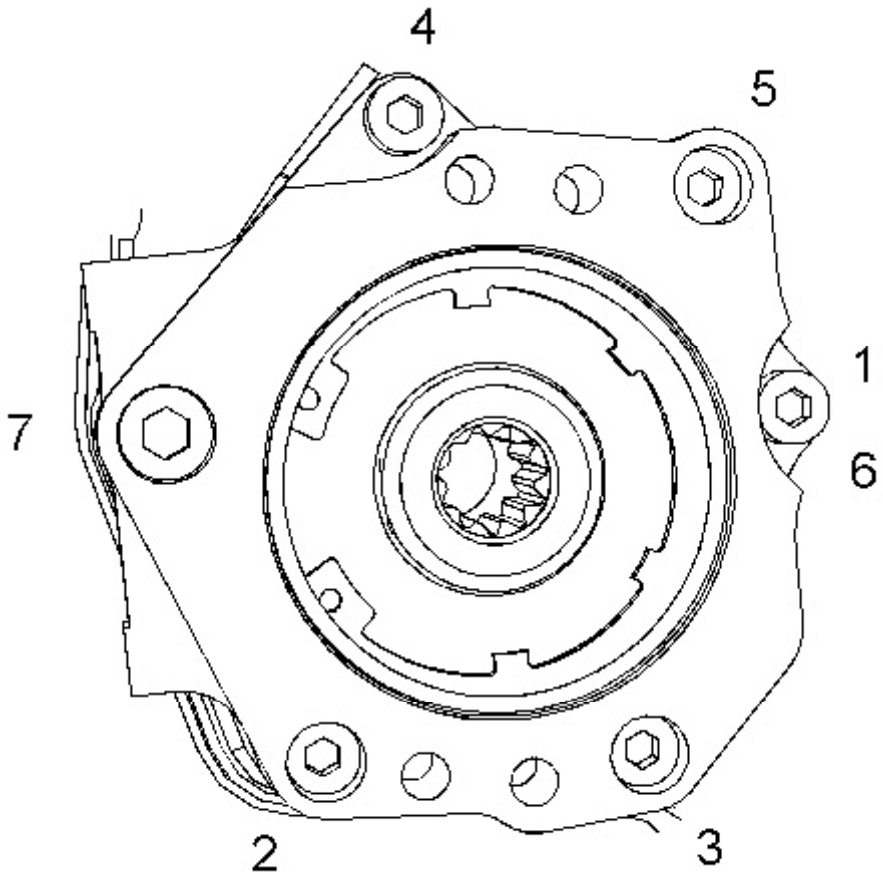

Illustration 2 g01444555

Sequence for tightening accessory drive

1. Inspect the bore in front housing (3) for damage. If necessary, replace the front housing. Refer to Disassembly and Assembly, "Housing (Front) - Remove" and Disassembly and Assembly, "Housing (Front) - Install".

2. Lightly lubricate a new O-ring seal (5) (not shown) with Tooling (C). Install the O-ring seal (not shown) into the groove in accessory drive housing (4).

3. Lightly lubricate all bearings, and all gears with clean engine lubricating oil. Install the assembly of the accessory drive to the front housing. Ensure that the flange on the accessory drive housing is flush with the front housing.

4. Apply Tooling (D) to allen head screws (1) and allen head screw (2).

5. Install allen head screws (1) and allen head screw (2) to accessory drive housing (4).

6. Tighten allen head screws (1) to a torque of 22 N·m (16 lb ft).

   Tighten allen head screw (2) to a torque of 44 N·m (32 lb ft). Tighten allen head screws (1) and (2) in the sequence that is shown in Illustration 2.

7. Ensure that there is tactile backlash between the idler gear and the accessory drive gear.

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Disassembly and Assembly
C4.4 Engines for Caterpillar Built Machines
Media Number -KENR6082-21 **Publication Date -01/10/2013** **Date Updated -30/01/2019**

i03505286

Accessory Drive - Remove

SMCS - 1207-011

Removal Procedure

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

NOTICE

Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting and repair of the product. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Dispose of all fluids according to local regulations and mandates.

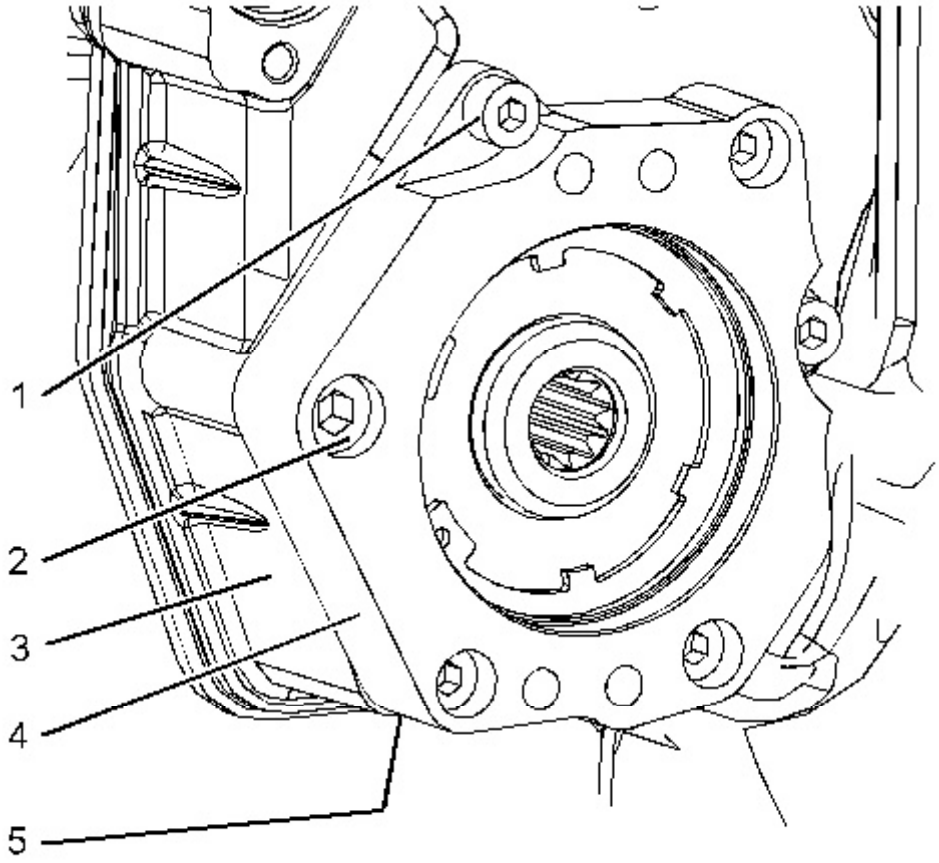

Illustration 1 g01441026

Typical example

1. Remove allen head screw (1) from accessory drive housing (4). Remove allen head screws (2) from accessory drive housing (4).
2. Remove accessory drive housing (4) from front housing (3).
3. Remove O-ring seal (5) (not shown) from accessory drive housing (4).

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Disassembly and Assembly
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Media Number -KENR6082-21 **Publication Date -01/10/2013** **Date Updated -30/01/2019**

i02929949

Air Compressor - Remove and Install

SMCS - 1803-010

Removal Procedure

Table 1

Required Tools			
Tool	**Part Number**	**Part Description**	**Qty**
A[1]	9U-6198	Crankshaft Turning Tool	1
A[2]	9U-7336	Housing	1
	5P-7305	Engine Turning Tool	1
B	230-6283	Timing Pin (Crankshaft)	1
C	1P-2320	Combination Puller	1

(1) The Crankshaft Turning Tool is used on the front pulley.

(2) This Tool is used in the aperture for the electric starting motor.

Note: Either Tooling (A) can be used. Use the Tooling that is most suitable.

NOTICE

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Dispose of all fluids according to local regulations and mandates.

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

Note: Put identification marks on all hoses, on all hose assemblies and on all tube assemblies for installation purposes. Plug all hose assemblies and tube assemblies. This helps to prevent fluid loss and this helps to keep contaminants from entering the system.

Do not disconnect the air lines until the air pressure in the system is at zero. If hose is disconnected under pressure it can cause personal injury.

1. Release the pressure from the air system.
2. Drain the coolant from the cooling system into a suitable container for storage or for disposal. Refer to Operation and Maintenance Manual, "Cooling System Coolant - Change" for the correct draining procedure.
3. Remove the front cover. Refer to Disassembly and Assembly, "Front Cover - Remove and Install".
4. If the engine is equipped with a hydraulic pump on the rear of the air compressor, remove the hydraulic pump.
5. Use Tooling (A) in order to rotate the crankshaft so that number one piston is at the top center position on the compression stroke. Refer to Systems Operation, Testing and Adjusting, "Finding Top Centre Position for No.1 Piston".

   Note: The air compressor must be timed with the engine in order to minimize engine vibration.

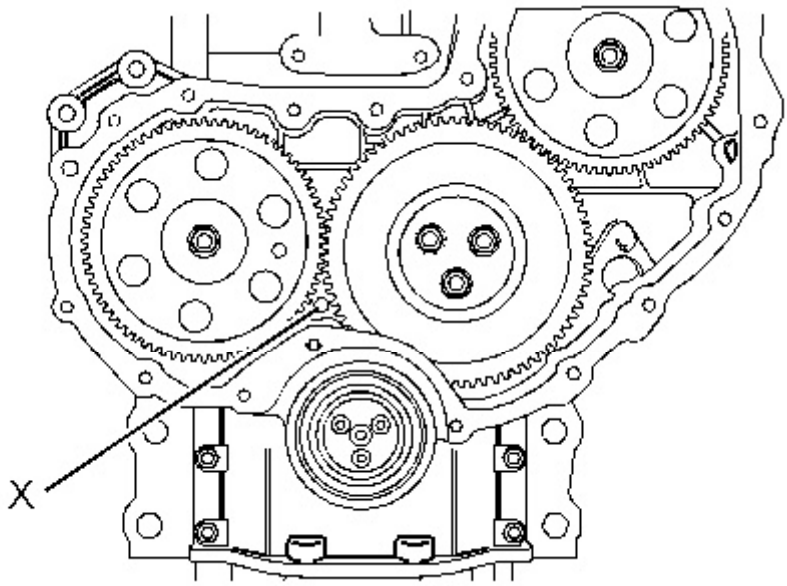

Illustration 1 g01272266

Typical example

6. Install Tooling (B) through Hole (X) in the front housing. Use Tooling (B) in order to lock the crankshaft.

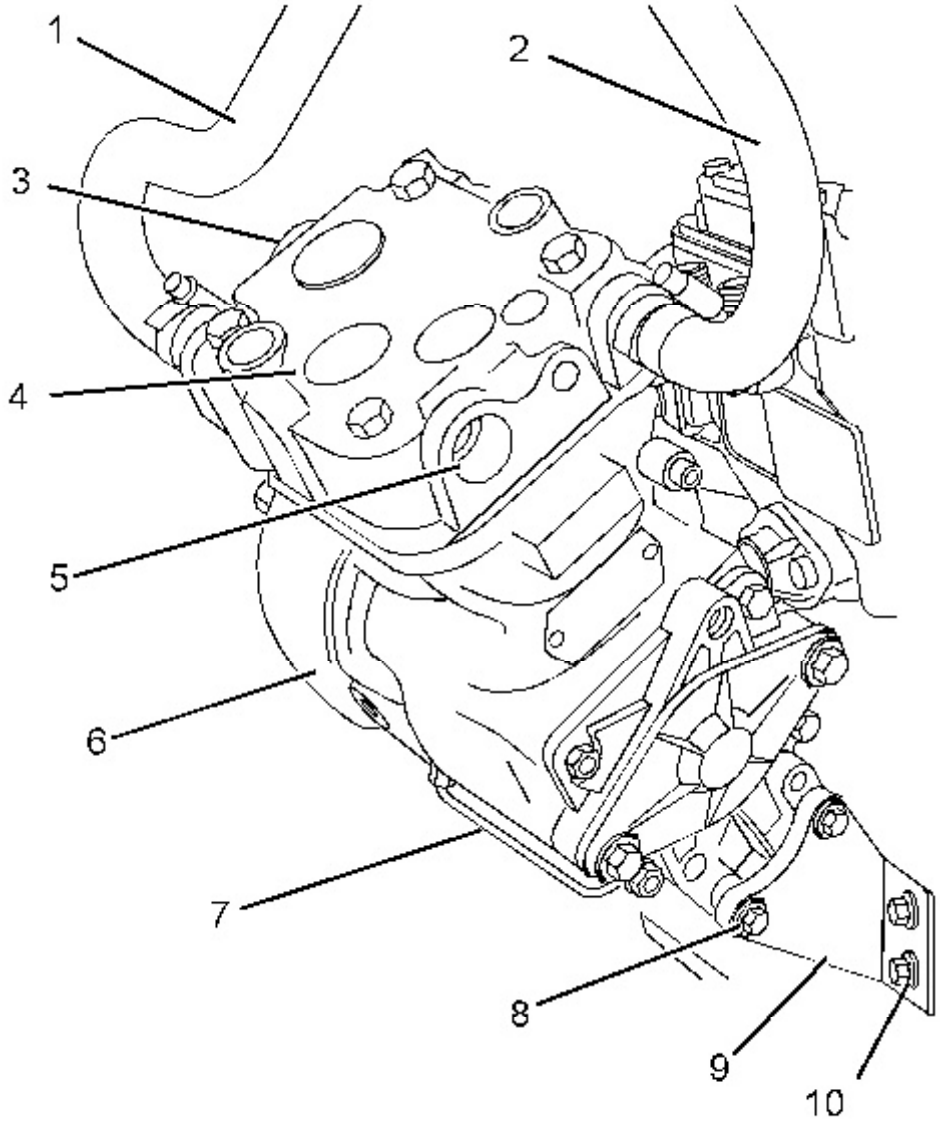

Illustration 2 g01250794

Typical example

7. Disconnect coolant hose (1) and coolant hose (2) from air compressor (4).
8. Disconnect the air line from port (3) and air line from port (5).
9. Remove tube assembly (7) from air compressor (4) and from the cylinder block.
10. Remove bolts (8) and bolts (10) from support bracket (9) and remove the support bracket.

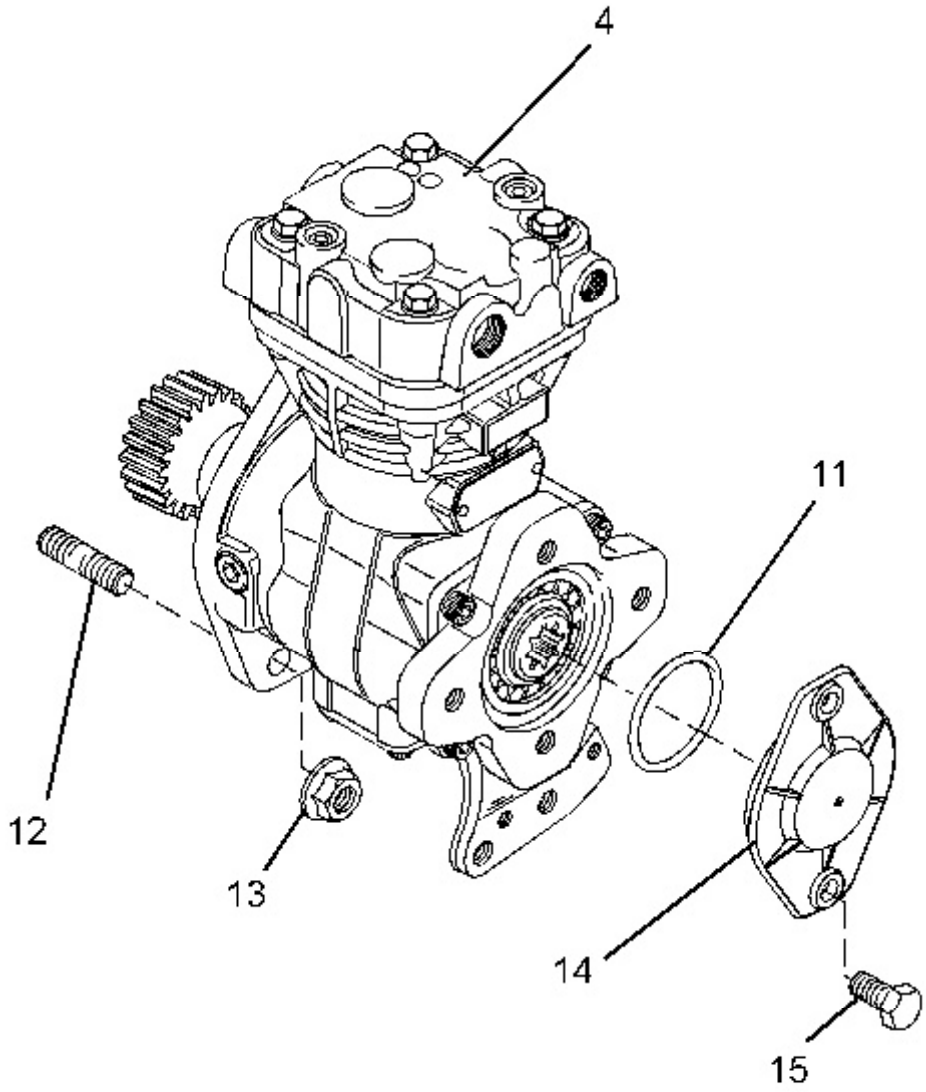

Illustration 3 g01250816

Typical example

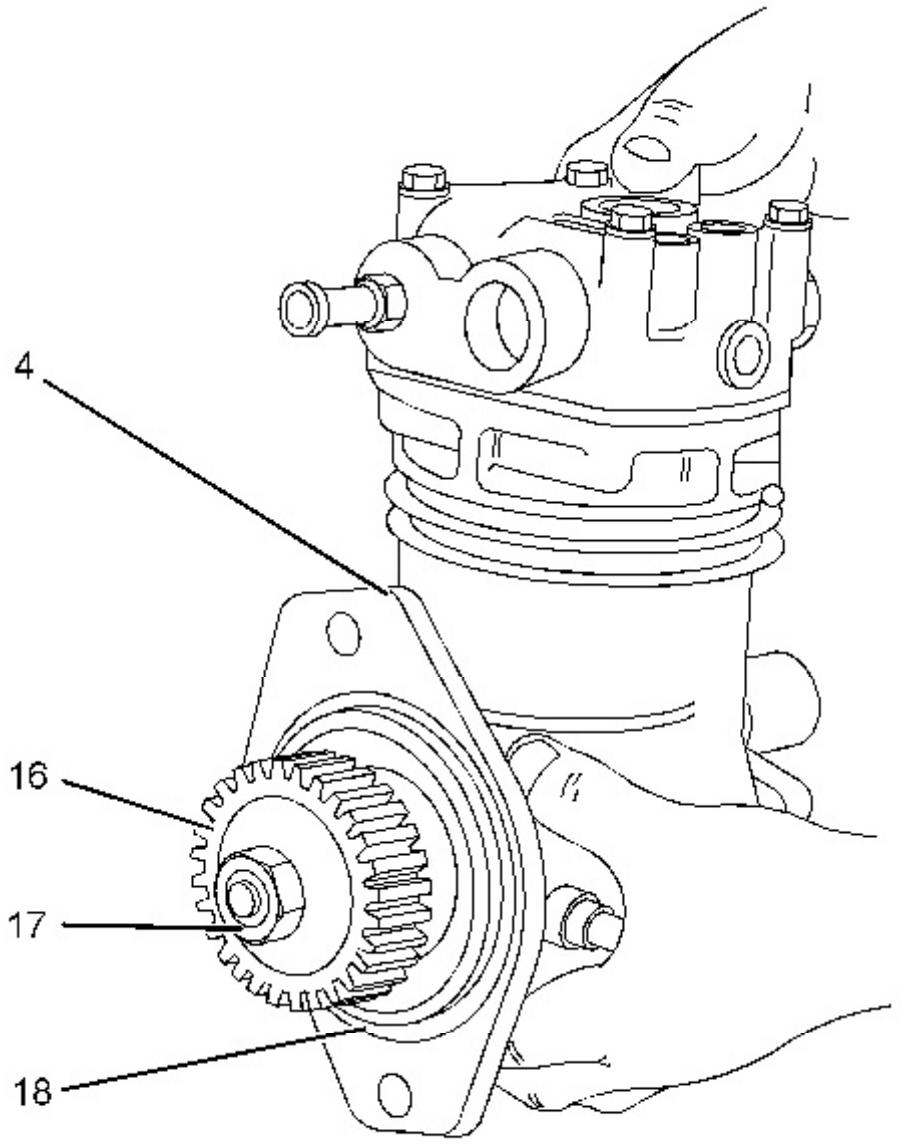

Illustration 4 g01250889

Typical example

11. Support air compressor (4). Remove nuts (13) and remove the air compressor from the front housing.
12. If necessary, remove studs (12) from the front housing.
13. Remove O-ring seal (18) from air compressor (4).
14. If necessary, remove bolts (15) and remove plate (14). Remove O-ring seal (11) from plate (14). Refer to Illustration 3.
15. If necessary, remove nut (17) and remove the spring washer. Use Tooling (C) in order to remove gear (16) from the crankshaft of the air compressor.

Installation Procedure

Table 2

Required Tools			
Tool	**Part Number**	**Part Description**	**Qty**
B	230-6283	Timing Pin (Crankshaft)	1
D	4C-9506	Retaining Compound	1
E	1U-6396	O-Ring Assembly Compound	1

NOTICE

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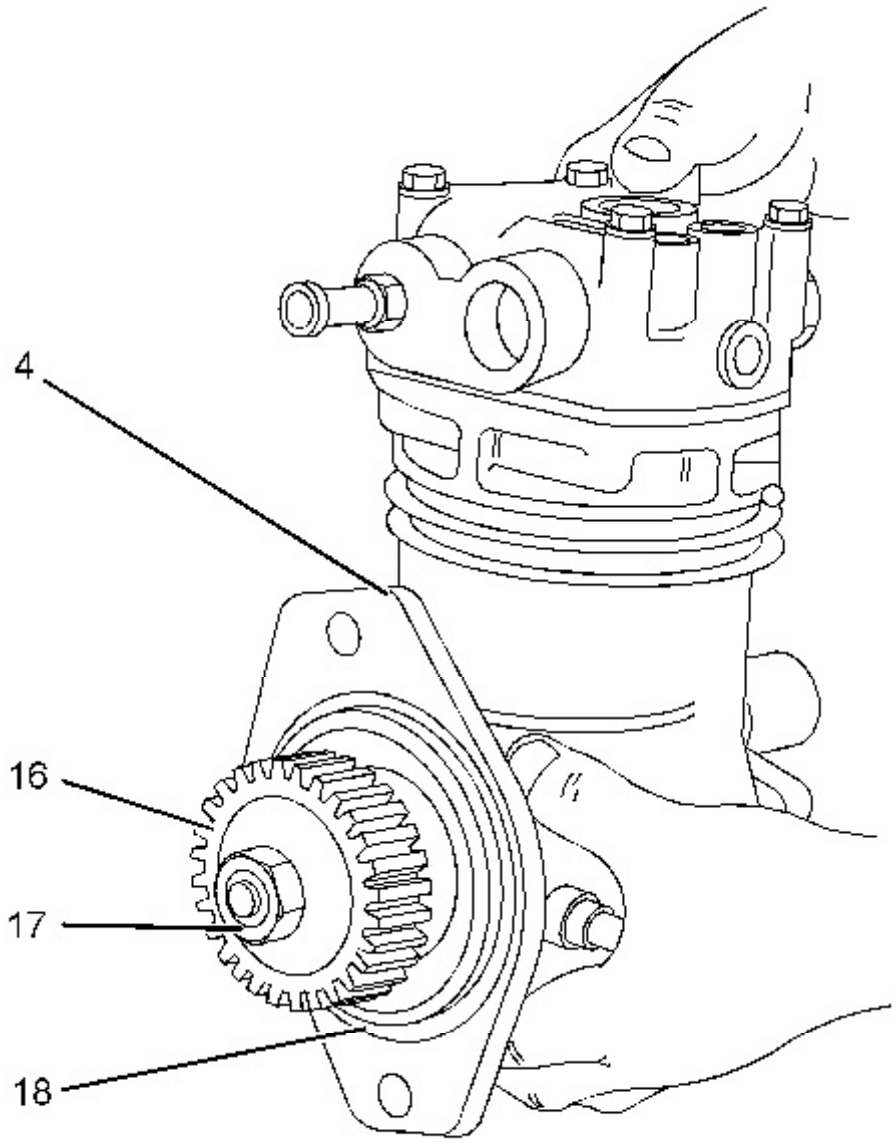

Illustration 5 g01250889

Typical example

1. If necessary, follow Step 1.a through Step 1.b in order to install the gear to the air compressor.

    a. Ensure that the shaft of air compressor (4) is clean and dry. Ensure that gear (16) is clean and free from damage.

    b. Install gear (16) and a new spring washer to the shaft of the air compressor.

    c. Apply Tooling (D) to the threads of the shaft. Install nut (17) to the shaft of air compressor (4). Tighten the nut to a torque of 120 N·m (89 lb ft).

2. Install the O-ring seal (18) to air compressor (4). Use Tooling (E) in order to lubricate the O -ring seal.

3. Ensure that number one piston is at the top center position on the compression stroke. Refer to the Systems Operation, Testing and Adjusting, "Finding Top Center Position for No. 1 Piston".

   Note: The air compressor must be timed with the engine in order to minimize engine vibration.

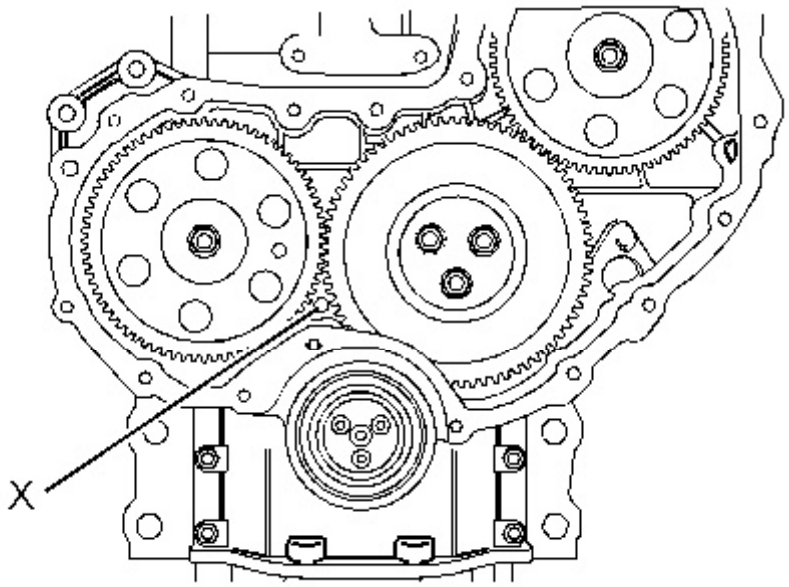

Illustration 6 g01272266

Typical example

4. Ensure that Tooling (B) is installed in Hole (X) in the front housing. Use Tooling (B) in order to lock the crankshaft in the correct position.

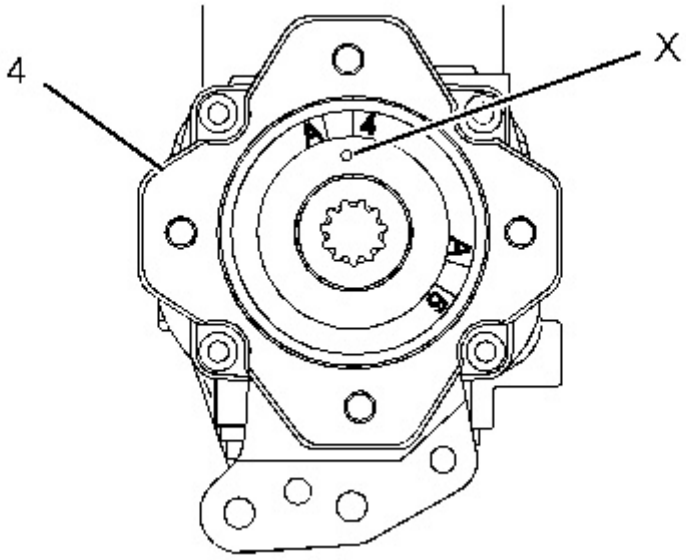

Illustration 7 g01250968

Typical air compressor with a SAE drive

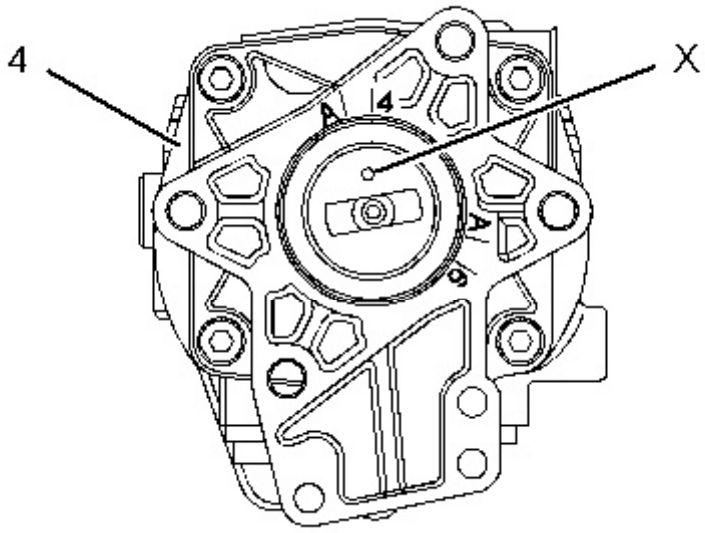

Illustration 8 g01251223

Typical air compressor with a DIN drive

5. Rotate the crankshaft of the air compressor until the timing Mark (X) is aligned with the timing Mark A4 on the rear face of air compressor (4). Refer to Illustration 7 for air compressors with a SAE drive. Refer to Illustration 8 for air compressors with a DIN drive.

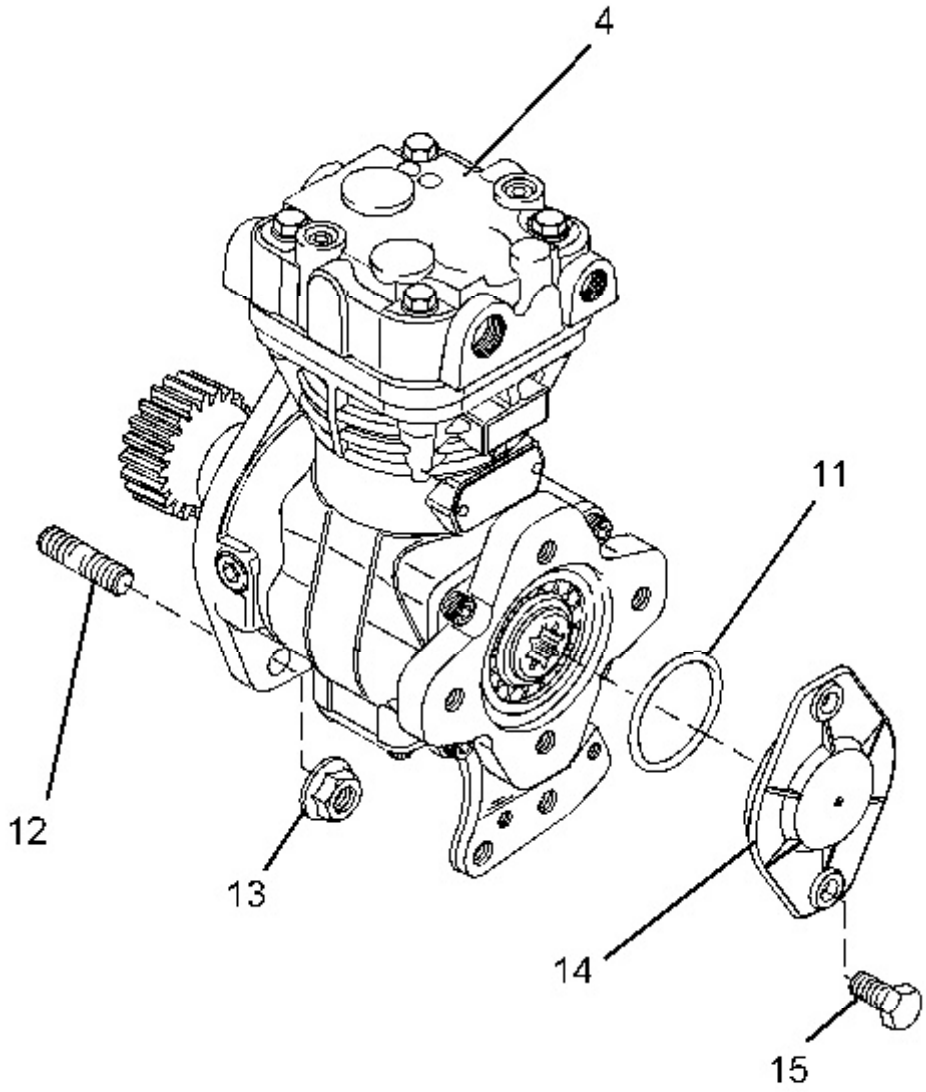

Illustration 9 g01250816

Typical example

6. If necessary, install studs (12) to the front housing.
7. Align the air compressor (4) with studs (12). Install the air compressor to the front housing. If necessary, rotate the crankshaft of the air compressor in a clockwise direction in order to align the gears.

   Note: Ensure that timing Mark (X) is aligned with the timing mark A4. Refer to Illustration 7 for air compressors with a SAE drive. Refer to Illustration 8 for air compressors with a DIN drive.
8. Install nuts (13). Tighten the nuts to a torque of 78 N·m (58 lb ft).
9. If necessary, follow Step 9.a through Step 9.c in order to install cover (14).
   a. Install a new O-ring seal (11) to cover (14). Use Tooling (E) in order to lubricate the O-ring seal.

b. Install cover (14) to air compressor (4).

c. Install bolts (15). Tighten the bolts to a torque of 13 N·m (9.5 lb ft).

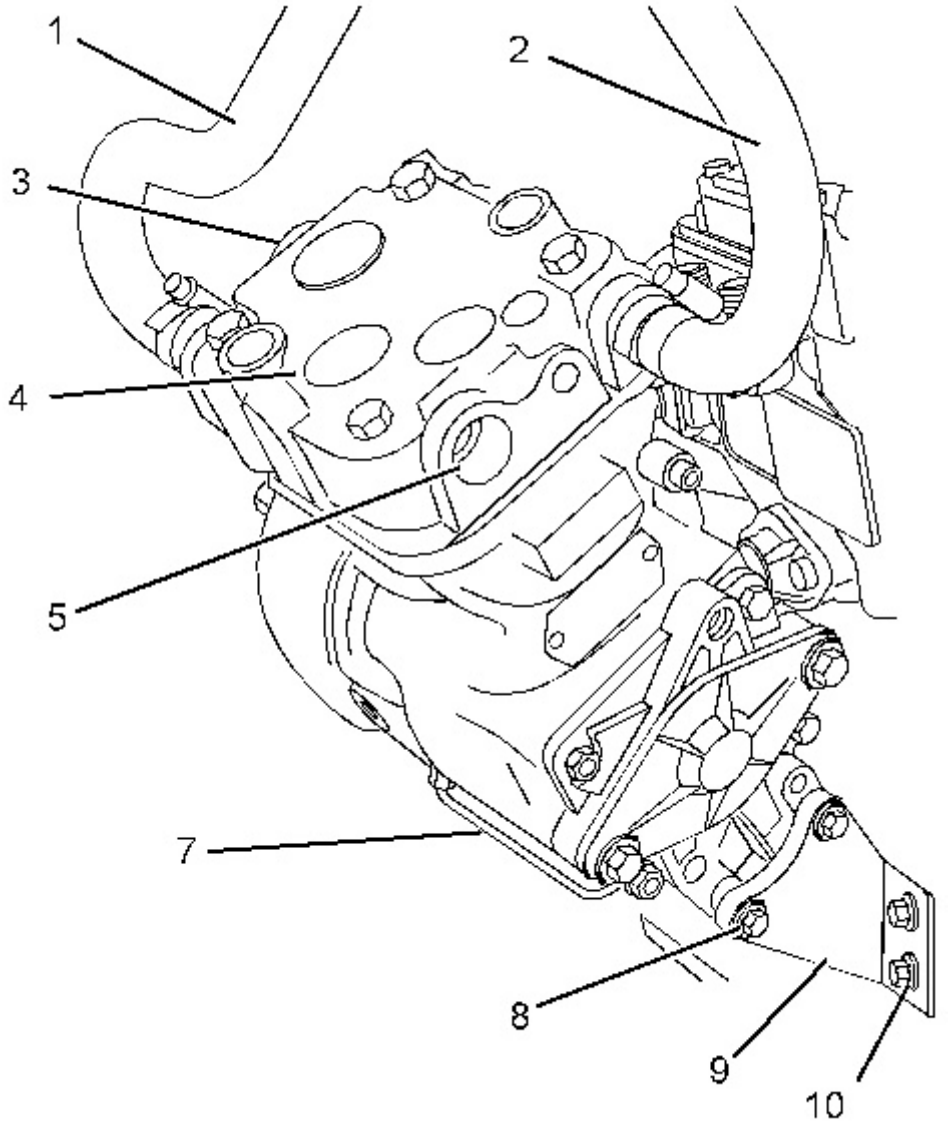

Illustration 10 g01522084

Typical example

10. Position support bracket (9) onto air compressor (4). Install bolts (8) finger tight.

11. Install bolts (10) finger tight.

12. Tighten bolts (8) to a torque of 22 N·m (16 lb ft). Tighten bolts (10) to a torque 22 N·m (16 lb ft).

    Note: Ensure that the air compressor is not stressed as the bolts are tightened.

13. Install tube assembly (7) to air compressor (4) and to the cylinder block. Tighten the nuts to a torque of 9 N·m (80 lb in).

14. Remove Tooling (B) from Hole (X) in the front housing.

15. Install the front cover. Refer to Disassembly and Assembly, "Front Cover - Remove and Install".

16. If the engine is equipped with a hydraulic pump on the rear of the air compressor, install the hydraulic pump.

17. Connect the air line to port (3) and air line to port (5) in the air compressor.

18. Connect coolant hose (1) and coolant hose (2) to air compressor (4).

19. Fill the cooling system with coolant to the correct level. Refer to the Operation and Maintenance Manual.

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